



# DM240

## Digital Video Broadcast Modulator



DM240 Digital Video Broadcast Modulator and PCMCIA Feature Cards

### HIGHLIGHTS

- ▶ Features and Software Upgrades Readily Available Through Easy-To-Install PCMCIA Feature Cards
- ▶ Data Rates up to 238 Mbps (In 1 bps Steps)
- ▶ QPSK, 8PSK and 16 QAM Operation
- ▶ Rate 1/2, 2/3, 3/4, 5/6, 7/8, 8/9
- ▶ Reed-Solomon Outer Coding
- ▶ Frequency-Agile 50 to 90, 100 to 180, or 950 to 1750 MHz
- ▶ EN 301-210, DVB and MPEG-2 Compliant; ITU-1294 System B (DSS) (Optional)
- ▶ Low-Profile Chassis - 1 Rack Unit (1.75") High
- ▶ User-Friendly Front Panel Interface
- ▶ Optional Redundancy Configuration Monitor Port Available

### THE NEW STANDARD IN DVB PERFORMANCE

Radyne's DM240 High-Speed Video Broadcast Modulator is the ideal choice to meet the exacting standards of high data-rate Video, Internet and Fiber Restoral satellite applications. Meeting the DVB standard EN301-210, the unit supports 8PSK and 16QAM applications with symbol rates up to 68 Msps. Supporting a variety of data and IF interfaces, the DM240 is configurable to meet most high-speed satellite applications.

The powerful onboard Monitor and Control (M&C) processor has the unique capability to download upgraded firmware and enhanced features from a field-changeable PCMCIA card. Offering unprecedented flexibility, this feature represents a new level of Radyne's outstanding Customer Support. Additionally, features are added to the installed equipment base with extreme ease, allowing the equipment to expand with changes in service while lowering initial installation budgets.

The modulator offers a frequency-agile IF output from 50 to 90, 100 to 180, or 950 to 1750 MHz in 100 Hz steps. Variable data rates from 1 Mbps to 238 Mbps can be set in 1 bps steps.

Additional features include the choice of remotely interfacing through one of three onboard connections: Ethernet, RS-485, or RS-232. The familiar Radyne front panel offers push-button control of all features and a backlit LCD display. Menus are specifically designed for ease of use and quick online operation as well as changes in all modulator configuration.

An optional 1:1 Redundancy Control Switch (RCS11) is available to provide the DM240 with superior system reliability.



# DM240 Digital Video Broadcast Modulator

## SPECIFICATIONS (EN301-210 AND EN300-421 COMPLIANT)

### IF INTERFACE

#### Standard IF Specification

Tx IF:	70/140 MHz
IF Step Size:	100 Hz
Power Output:	+5 to -20 dBm
Power Step Size:	0.1 dB
Power Output Accuracy:	± 0.5 dB
Power Output Stability:	± 0.5 dB
Carrier Mute:	-55 dB, Automatic on Frequency Change
Spurious:	-55 dBc, In-Band
Output:	-45 dBc, Out-of-Band
Output Impedance:	75 Ohm
Return Loss:	20 dB
Phase Noise:	100 Hz, -63 dBc 1 kHz, -73 dBc 10 kHz, -83 dBc 100 kHz, -96 dBc
Output Connector:	BNC Female

#### L-Band Specification

Tx IF:	950 to 1750 MHz
IF Step Size:	100 Hz
Power Output:	-5 to -30 dBm
Power Output Accuracy:	± 0.5 dB
Power Output Stability:	± 0.5 dB
Step Size:	0.1 dB
Carrier Mute:	-55 dB, Automatic on Frequency Change
Spurious:	-55 dBc, In-Band
Output:	-45 dBc, Out-of-Band
Output Impedance:	50 Ohm
Return Loss:	17 dB
Phase Noise:	100 Hz -63 dBc 1 kHz -73 dBc 10 kHz -83 dBc 100 kHz -96 dBc
Output Connector:	SMA

### BASEBAND

Variable Data Rate:	1 to 238 Mbps
Step Size:	1 bps
Symbol Rate:	68 Msps Maximum

#### Forward Error Correction (FEC) Encoding

Inner Code:	PTCM (8PSK, 16QAM), QPSK (Viterbi)
Code Rates:	QPSK = 1/2, 2/3, 3/4, 5/6, 7/8 8PSK = 2/3, 5/6, 8/9 16 QAM = 3/4, 7/8
Outer Code:	Reed-Solomon (204,188, T = 8)
Interleaving:	Convolutional, I = 12
Data Scrambling:	Per EN 300-421
Terrestrial Framing	
Modes:	204, 188, 187
Internal Clock Source	
Stability:	10 ppm
External Clock Accuracy:	100 ppm

### MONITOR AND CONTROL

Interface: Serial RS485 (Remote) and RS232 (Terminal)  
10Base-T Ethernet, (SNMP V1, V2, and V3)

Parameters Controlled: IF Frequency  
IF Output Level  
IF Output On/Off  
Data Rate  
Symbol Rate  
Clock Polarity  
Data Polarity  
Inner Code Rate  
Test Modes

Parameters Monitored: Faults  
Stored Faults

### OPTIONAL DATA INTERFACES

Serial: G.703, T1, E1, T2, E2, T3, E3, ST S1  
DVB ASI  
RS422/449 (<16 Mbps)  
HSSI  
DSS

Parallel: RS422 (M2P, DVB)  
LVDS (M2P, DVB)  
DSS

### ENVIRONMENTAL

Prime Power: 100 to 240 VAC, 50 to 60 Hz, 40 Watts Maximum  
Operating Temperature: 0 to 50°C  
Humidity: Up To 95%, Non-Condensing  
Storage Temperature: -20 to 70°C  
Humidity: Up To 99%, Non-Condensing

### PHYSICAL

Weight: 10 Pounds (4 Kg)  
Size: 19" W x 17" D x 1.75" H  
48.3 x 43.2 x 4.45 (cm)

### OPTIONS

Output Impedance, 50 Ohm BNC (70/140 MHz)  
48 VDC Operation

### CONFIGURATION SERIES

Series 100: 1 - 10 Msps, QPSK  
Series 200: 1 - 45 Msps, QPSK  
Series 300: 1 - 45 Msps, QPSK/8PSK  
Series 400: 1 - 68 Msps, QPSK/8PSK/16QAM

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